THE GEOMETRY OF THE NAKED SINGULARITY

by Carl Hollingsworth and
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A profound puzzle has emerged from recent scientific discovery. Dark matter appears to be a common feature—so common that the majority of mass is dark. Dark matter is predicted in the disc of our galaxy and in envelopes around every galaxy. The mystery is: what is it, and why can't we find it? The solution may be right under our nose.

A naked singularity model solves dark matter's mystery with the same rules for a single cell as for a single galaxy. For dark matter, the rules of physics as we know them do not apply. It exists as informational mass in negative space. This solution to dark matter's mystery dramatically changes our understanding of quantum physics and information's physical nature.

The Naked Singularity Model

We are looking at a new model of physical organisation: a parallel network of conserved information.

Our naked singularity model (see figure 1) identifies two components to physical structure. The two components are separated by individual requirements of existence, yet inseparably linked in every host environment. Unextended component one exists adjacent to extended component two. The two do not interact directly. Instead, interactions occur in frequency space by some sort of phase-coupling phenomenon. Nerve impulse traffic generates the necessary frequency waves for phase-coupling.

We have determined the transport energy source as boundary layer motion. The boundary layer behaviour absorbs all surrounding frequency waves. It then transports the *eigenfrequency* (the sum of absorbed informational frequency) to naked singularity locations at greatest chord height or depth, where it stops. At this point, the delivered eigenfrequency can phase-couple, since it is time locked and polarity matched. We will explore this transport mechanism in depth later.

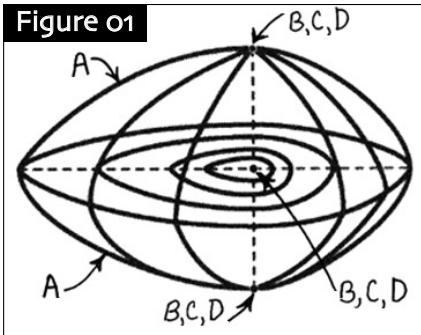
Some Predicted Elements

- A naked singularity has slight mass.
- A naked singularity is negative space.
- A naked singularity requires a strongly asymmetric environment.
- Functional asymmetric enclosure is provided by all host forms.
- Such enclosure must approach maximum surface for volume enclosed.
- A naked singularity is time locked.
- Shifts of a naked singularity from one host enclosure to another are wormhole events.
- Wormhole events are time locked.

Naked singularities are interconnected by a time-locked history of host location and wormhole events. These predicted elements paint a strange picture of an adjacent negative space beyond the grasp of our senses.

Similar notions have always captivated human thought. A brief history lesson will help you get the idea.

Figure 01



A - Asymmetric Enclosure
B - Negative Space Location
C - Naked Singularity
D - Time Locked

The Unextended World

The story of the unextended world is an ancient one, with roots stretching back to prehistory. Hermetic science described the unextended as *prime material*. *Prima materia* served as a ghostly template behind the visible shapes of matter. Everything, from mineral to man, contained this very fine, subtle spirit substance. The visible was considered a mirror image of prime material and had no independent existence.

This mind-in-the-body idea pretty much prevailed until the beginnings of Western science and René Descartes' birth in 1596. Only since Descartes has the material world been broken into two. Matter, the stuff you can see and touch, claims the property of spatial extension. Mind is separate and lacks spatial extension. Interchangeable mind, soul or spirit literally exists in an unextended state without occupying space. Today, this is considered dualist philosophy (the view that both mind and matter are real but separate).

René Descartes is credited with the idea of unextended state. He considered mind and soul the same thing: a spiritual entity unextended in space. The body has extension, while mind does not. Mind's nature is to think, therefore exist. Because mind is independent of the body, it survives bodily death.

Descartes' famous quote—"I think, therefore I am"—first appeared in the 1637 *Discourse on the Method*, in French. (By 1637, Galileo was under house arrest. It was a risky time for new and possibly heretical ideas.) In 1644, the quote appeared in Latin (*Cogito, ergo sum*) as the lead to *Principles of Philosophy*. Here he separated the thinking thing (*res cognitans*) from that which has extension (*res extensa*).

Not just a philosopher, Descartes was mathematically sophisticated. He developed Cartesian coordinate graphs. Calling the square root of negative numbers *imaginary* (a term still in use), he chose not to extend his graphs to the negative—an oversight almost immediately remedied by his contemporaries (see figure 2).

Figure 02

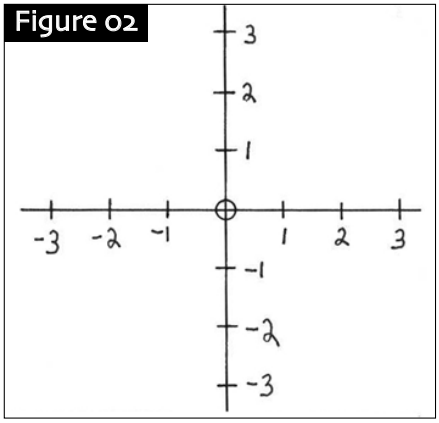
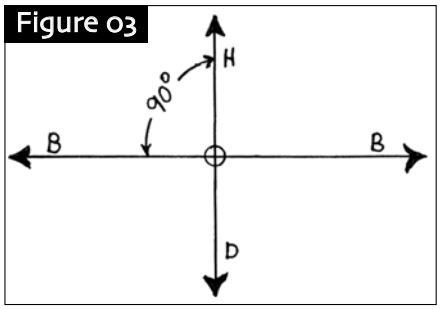


Figure 03



Cartesian graphs have developed into one of the best scientific tools. While mathematical formula is sufficient for precise description, a glance at corresponding graphs clearly shows how change in one quantity influences others. Today, these graphs are widely used in science and industry to represent directional or measured quantities and formulas graphically. For this, Descartes is generally considered the founder of analytical geometry, or at least the first to write about it.

While embracing analytical geometry, science regards Cartesian dualism with horror. How is it that a mind or soul is unextended in space? Where is it? How can it interact with the extended physical host? Such a transaction seems impossible. Surely mind can be a property of the material body without resorting to an imaginary unextended world.

Descartes could never adequately respond to these and other criticisms. He tried, but the needed technology just wasn't there. Today, the tables may have turned. From the archaic viewpoint, astonishing advances in neuroscience, genetics and quantum physics have already answered the "where" and "how" of the unextended world. But we're getting ahead of the story. Let's start at the beginning: the hermetic science of prime material.

Hermetic Science

In the centres of form
The prime material hides
Informing the host
That it secretly guides

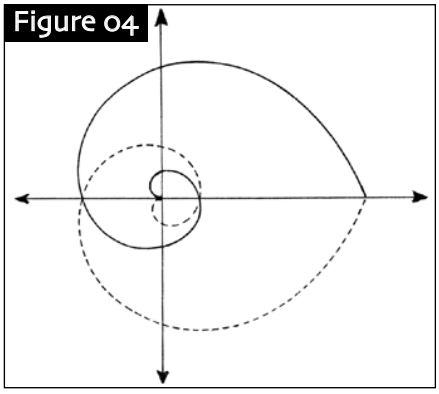
For thousands of years, one idea—Hermetic prime material geometry—stood as the foundation of science. A concept that survived civilisations lives on in the popular imagination, yet is rarely presented in its original scientific context. It's strange indeed that an idea once widely understood has become difficult to rediscover.

Let's start the inquiry with the oldest known scientific principle: the First Prime of Universal Order—a point which is the apices of two right angles measuring height, depth and breadth (see figure 3).

The First Prime explains, with stick figure simplicity, the relationship of prime material to the host form it occupies. Prime location is strictly limited to the apices' point. Height, breadth and depth can be graphed on the shared-centre right angles. Descartes, a student of archaic science, may have based his Cartesian graphs on First Prime graphical representation.

In a letter to Mersenne, Descartes described the equiangular spiral as the secret to the universe. Hermetic geometry employed spirals ranging from equable to equiangular, sometimes in two-dimensional shared-centre spiral planes. Two-dimensional spiral planes were considered the connecting link between three-dimensional host form and one-dimensional prime material. On a First Prime graph, it looks like this (see figure 4):

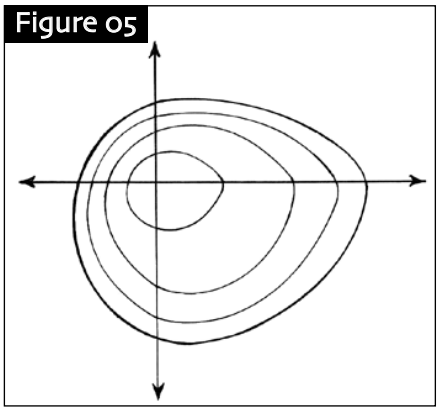
Figure 04



These two-dimensional spiral planes (when viewed from the appropriate cross-section) occur throughout the natural world, but are rarely observed in the Euclidean representations. Most examples occur as conformal distortions.

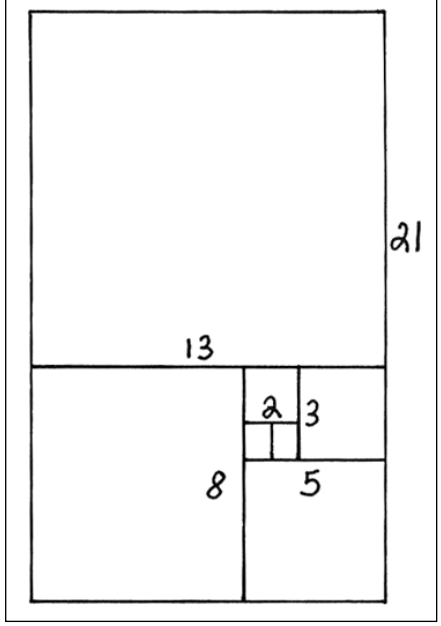
Hermetic geometry artifacts display a working understanding of conformal distortions—a fairly recent achievement of modern science with Reimannian and Lobachevskian geometry. Figure 5 shows a conformal distortion of figure 4.

Figure 05



Hermetic scientists concluded that prime material was a subtle spirit substance, hiding within the myriad forms of the universe by occupying a strictly ordered geometry of locations. Great importance was placed on the golden ratio and the Fibonacci series, both evident in the golden rectangle (see figure 6).

Figure 06

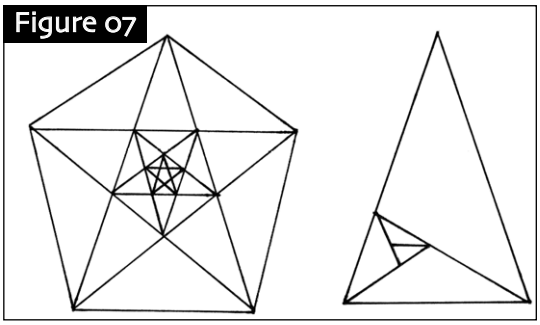


The golden rectangle is a gnomon which regresses to a potential prime location in a gnomic regression. *Gnomon* is defined as "any figure which suffered no change, save for magnitude". Many figures fit the gnomon definition and golden ratio (see figure 7). Since everything physical generates from central prime material in a gnomic growth pattern, the material world is considered a network of gnomons without independent existence of their own.

Fascinating, but often cumbersome, technology developed along this line of reasoning, probably peaking by the late Bronze Age. Unfortunately, subsequent civilisations apparently lost the whole understanding, retaining only the sacred geometry symbolism and various mystical practices. By the time of modern scientific development, hermetic geometry had fallen into disrepute, save as fable and superstition.

It's not surprising that prime material awaits rediscovery, and it is clear that the solutions of the past will not answer the questions of the future. The "where",

Figure 07



"what" and "how" of an adjacent negative space is an extremely difficult research problem. Only in the last 30 years has science acquired the necessary expertise and technology to investigate the phenomenon.

Neuroscience, for one, has developed the tools and done the research confirming a naked singularity network is possible and even probable. So, next thing, let's plug the problem into recent neuroscience observations and see what comes out.

The Neuroscience Connection

Hermetic science was self-limiting. A comprehensive understanding of the physical world lay beyond its scope of inquiry. Descartes' dualist approach took a step towards updating the prime material view, but the effort was well ahead of his time. Today, rapid advances in neuroscience suggest a naked singularity model is on the right track. Let's look at some of what is presently known about neuroanatomy.

The central nervous system is constructed of two kinds of cells: the *neuron* and the *glial*. Glial cells support neuron cells. Neuron cells linked together in circuit generate nerve impulse traffic; they have three main components (see figure 8):

1 – a cell body containing the *nucleus*;
2 – a main output fibre, known as the *axon*;
3 – input fibres, known as *dendrites*.

Neuron cells interconnect in synapses, which usually consist of an output axon contacting the input dendrites of another neuron cell. Billions of neuron cells organise into local circuits in this manner. When arranged in parallel layers, local circuit groups are called *cortical regions*. When non-layered, local circuit groups are called *nuclei*. These microscopic local circuits group together, forming pathways visible to the eye. Other non–central nervous system cell groups can selectively join circuit pathways through bundles of axons reaching to every point in the body. The whole deal forms a sort of nerve impulse traffic highway system.

Here is a thumbnail sketch of the nerve impulse. Neuron cells fire a unique electrical current from the cell body down the axon. Each neuron cell tends to talk to a few others close by. Whether or not the next adjacent neuron cell will fire depends on current strength. The basic architecture stays local. Almost any specific brain function can be traced to the group of neuron cells associated with it.

There is nothing haphazard about this mapping. Magnetic resonance imaging (MRI) and positron emission tomography (PET) scanning allow the three-dimensional reconstruction of nerve impulse traffic. During surgery, changes in electrical potential are measured directly on the brain's surface. Polygraphs measure the skin's electrical conductance to identify specific responses. Surgeons are now implanting tiny electrodes deep into patients' brains. The electrodes are internally connected to a battery and pulse generator that is surgically implanted below the collarbone. This powerpack delivers pulses of electricity to interrupt selected nerve impulse traffic for the purpose of controlling severe movement disorders. These and other related results paint a comprehensive picture of the nerve impulse traffic.

Despite impressive technical achievements, memory remains a mystery. Neural patterns function as selective storage and retrieval circuits for memory images. These are representations prompted by an object or previous experience. Location of memory images is not presently accounted for in neuroanatomy. It is known that they do not bind in the circuit! The majority position is that neuroanatomy will be capable of accounting for memory image location in some yet-to-be-discovered way.

This problem is generally known as the *binding* problem. Binding requires some sort of time-locking to account for memory image storage and retrieval. This is where the historical model fits in. Prime material, in an unextended network of central nervous system locations, uniquely and elegantly solves the binding problem. In modern science terminology, we are talking about negative-space informational mass in a naked singularity network. A naked singularity is different from its "centre of a black hole" cousin. A naked singularity, by definition, is time locked and has slight mass.

Our proposed idea is that naked singularity locations form a time-locked network of memory images. Well-defined neural patterns selectively store and retrieve memory images in a reversible computation process.

Presumably there is a hierarchy of this reversible computation going on. A single host cell would contain a simple naked singularity network. Memory at this level would deal with local concerns of specialised cell function. This time-locked information is available to other networks as required.

At the most complicated level, consciousness is closely linked with the central nervous system. Recent evidence suggests the location of core consciousness as the midline area of the central nervous system; specifically, a right-hand and left-hand mirror image across the centreline.

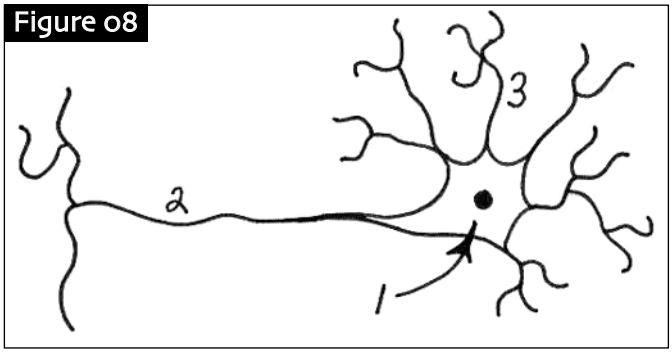
Damage to these sites disrupts core consciousness, while extensive damage that leaves the centreline intact does not. Not surprisingly, this centreline is ancient from an evolutionary perspective; it is present in many non-human species, and matures early in embryonic growth. Many other neuroscience examples support this idea. None proves it conclusively, but the naked singularity model does solve the binding problem and otherwise holds together rather well.

The binding problem is the same for genetics. Let's consider how our model fits there.

The Genetic Code

Last year, in a rare show of unity, private sector and government-funded researchers jointly declared the Genome Project substantially complete. A linear sequence base has been acquired for the fruit fly, mouse and human. It turns out that the fruit fly has

Figure 08



50% of the human genetic code. Don't think this makes the fruit fly half as complex as a person. Each human gene can make three or four different protein patterns, plus variations. A fruit fly gene is limited to one protein configuration and few variations.

The whole linear sequence—100,000 to 120,000 genes—is in every cell in your body. Out of these, about 30,000 are human genes. They are scattered here and there in the sequence. Nobody has actually seen a gene. Genetic information first appears as DNA. The DNA tells RNA what proteins to build. The RNA assembles protein patterns from amino acids. Three types of RNA build protein patterns from 20 different amino acids. Each protein folds into its own unique shape. They look like fantastic, two-dimensional origami art.

The next big genetics project is mapping the possible protein shapes. This counterpart to the Genome Project will be called the Proteo. Success seems likely, since the chemical machinery of protein synthesis is so well understood. Check out an up-to-date science text for the details.

Think of DNA as the architect, RNA as the workers, amino acids as lumber, and protein patterns as the framing superstructure. Take note that the one-dimensional gene is missing from the chemical explanation. Genetic information first appears as DNA, but that is not where it is stored. It's the same binding problem as for memory.

Binding requires time-locking to account for information storage and retrieval. Genetic information binds with the one-dimensional gene. It is supplied to the chemical process in a computer code. This code is written in three-letter words. The alphabet for DNA is A, C, G and T; each letter corresponds to the bases adenine, cytosine, guanine and thymine. RNA is the same, except U (uracil) replaces T (thymine). Like familiar binary computer code, there are no spaces between commands. For example, AUGCGG is an RNA code because it contains the letter U. This message is two command words, each the mandatory three letters long. This is the language between genes and their DNA–RNA replicating machinery.

You can see where we are going with this. One-dimensional genes represent the naked singularity network for carbon-based life. Cell wall and nucleus membranes fulfill the asymmetric enclosure requirement. But we're getting ahead of the story again.

Let's see why quantum physics needs adjacent negative space.

The Problem with Physics

Physics is regarded as the measuring rod of reality, but there are a few problems. Astrophysics knows that dark matter exists, yet has no clue what it is. The same goes for dark energy. The inquiry is concentrated on black holes and dark envelopes around galaxies. It is assumed that the dark matter is out there because no one has detected any locally.

The quantum physics problem is at the subatomic level. Everything adds up nicely, but nobody believes that the results apply to the real world. Particles appear out of nothing, then disappear. They exist in many places at once, while behaving like both waves and particles. These and other quantum mechanics results are not in doubt. In the 101 years since Max Planck came up with the idea, it has proven the most accurate scientific theory ever developed. The catch is, it only applies to the subatomic world.

You can see the problem. Modern physics has given up on measuring reality. Gravity works, so there is a bunch of dark matter at the big scale. Quantum mechanics works, but only at the small scale. This leaves Newton's mechanics, modified by Einstein. This works without including modern results.

Adding to the confusion is the *many worlds interpretation* (MWI) of quantum weirdness. The conservative version goes like this. When a quantum measurement is made, the universe splits into two or more possible futures. The extra futures are considered abstract mathematical constructs, with the real future being the one we are in. This is consistent with quantum mechanics if you stay at the subatomic level. The radical view thinks all the parallel futures are literally real. Adherents feel this brings quantum observations into the familiar world. The conservative camp figures the literal interpretation isn't worth the metaphysical baggage.

Quantum paradox is a popular theme these days. A good bookstore has several shelves of books on the subject. Parallel worlds and black holes are favourite topics; and if you check carefully, a naked singularity is occasionally mentioned. Our naked singularity model appears to solve quantum paradox better than the others. It is at least in conceptual agreement with quantum and astrophysics observations, while applying one model to all scales. As the old saying goes, time will tell.

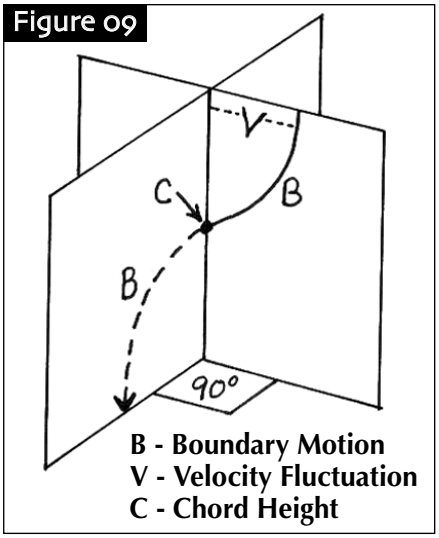
That's about enough history and science background to help you get the idea. Let's see what we can say about the naked singularity model now.

Our Naked Singularity Model Again

René Descartes broke the world in two by separating mind from that which has extension. It turns out he was right. Our model suggests unextended informational mass at time-locked locations, with boundary behaviour as its messenger mechanism.

Let's look at boundary behaviour on a flow diagram (see figure 9). Note that it depicts an idealised laminar flow and boundary layer motion. A natural fluid-form interaction is rarely this perfect.

Figure 09



Laminar flow develops the most organised boundary motion, but all flows on a surface generate some boundary behaviour. When laminar flow occurs adjacent to a strongly asymmetric surface, the boundary motion moves at right angles to the parent flow and always in the direction of greatest chord height on the surface.

This boundary behaviour absorbs amplitude frequency from surrounding frequency waves. In this manner, available informational waves bind in the boundary flow as amplified velocity fluctuations. We call the sum of absorbed informational frequency the *eigenfrequency*. Boundary motion carries the eigenfrequency to surface point at greatest chord height, where it stops. At this point, the delivered eigenfrequency can phase-couple, since it is temporarily time locked and polarity matched with a naked singularity location. Information in the eigenfrequency is now informational mass at rest potential in negative space. This is the information messenger mechanism (see figure 10). The simplest

physical structure has these fluid-form interaction features. The most complex has the same features regardless of the complicated detail.

Elements of the Model

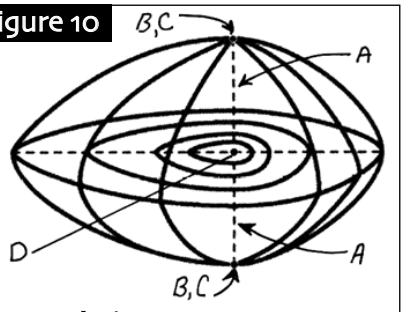
Laminar flow rarely stays stable for long. Velocity and pressures will vary. The associated surface can deform or change aspect to velocity. Often the main contributor to laminar breakdown is the amplified messenger eigenfrequency. The more and stronger the frequency waves absorbed, the quicker the boundary layer velocity fluctuations trip the laminar flow to turbulent flow.

We can say that laminar fluid-form interactions are nature's method for storage and retrieval of informational mass.

Let's break it down into elements:

- Informational waves absorbed into boundary layer.
- Boundary carried as velocity fluctuations to naked singularity location.
- Stops briefly, allowing time-locked polarity matching.
- Transitions to negative space as informational mass at rest potential state.
- Reverses process for informational mass retrieval.
- Boundary breaks up, releasing discrete informational frequencies into flow medium.

Figure 10



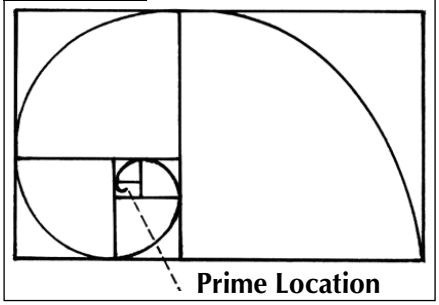
A - Polarity
B - Phase-Couple Point
C - Chord Height
D - Informational Mass

We can go on with this, but it is just tweaking the same process into different situations. Let's review how our story points fit the model.

• Hermetic Science

With modern tools in hand, it is easy to disregard the old hermetic scientists, but they were right about the gnomic geometry. Natural morphology does reduce to two-dimensional spiral-based planes and associated enclosures. They knew exactly where their prime material was located (see figure 11). Note: see D'Arcy Thompson's *On Growth and Form* (Cambridge University Press, 1917) on conformal equivalents.

Figure 11



• Neuroscience

Neuroscience has tracked nerve impulse traffic to specific and localised function. It defines time-locked binding as memory images stored, then retrieved intact years or decades later. This is a crucial element in our model's predictions. Neuroscience is right in that nerve impulse traffic stores short-term memory in frequency space. Our model agrees that information is in frequency waves until delivered by a boundary carrier. It is informational mass only at rest potential state.

• Genetics

The binding problem is the same here. Genetics research has unravelled the genetic code. Genes are one-dimensional and scattered in less than 2% of the DNA string. DNA and RNA use a chemical alphabet to spell out natural form. Our model suggests the gene is naked singularity core memory until retrieved in the DNA–RNA protein cycle. It is not clear that boundary carrier elements play a direct role in storage and retrieval of genetic information. We think a specialised mechanism is at play in the double helix environment.

• Physics

We have decades-old calculations in front of us as we write.

Richard Wayte, of the Imperial College, London, describes gravity in terms of *mass loss transfer*. This idea uniquely fits our model and has dramatic implications. It was refused consideration for lack of a suitable messenger particle function to consummate the transfer. High-energy physics needs to lose the preconceived notion of messenger particle function and broaden its approach to delivery mechanisms.

Astrophysics is doing better. It has found dark matter's footprint with sophisticated gravity lensing. The same results predict envelope enclosure surrounding galaxies. Our model requires just such a strong asymmetric enclosure. A galaxy worth of conserved informational mass will help balance the missing-mass ledger.

• Wormhole Events

This covers our model pretty well, except for transitions from one host location to another and the history of transitions. We wouldn't mind skipping wormhole events and their sum of histories; the metaphysical baggage is a load. It is, however, a clearly predicted element of our model. Let's pass the Hollywood wormhole illustration and stick to the elements.

Here are the transition elements:

- Shifts of informational mass from one host location to another are wormhole events.
- Wormhole events are time locked.
- Naked singularities are interconnected by a time-locked history of wormhole events.

Our model predicts a time-locked sum of histories interconnecting everything forever. This conclusion assumes informational mass at rest potential as the transitional state. Our research indicates this is probably true. It further assumes a 100% success rate for wormhole events. This seems less likely. A conserved sum of histories is a definite maybe.

Towards Applied Research

Our basic research is substantially complete. C. E. K. Mees, former director of Eastman Kodak Laboratories, defined *basic research* as "the examination of materials and phenomena to discover fundamental properties, relationships and trends". Mees went on to define *applied research* as "basic research combined with existing technology to yield new technology".

We are moving on to applied research and we urge the reader to do the same. It has become evident that numerous applied research applications will be productive. The trick is to take what you know, insert the appropriate model elements and see what clicks. ∞

Editor's Note:

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